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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,516	04/01/2004	Heung-Yeung Shum	MS1-1884US	3162

22801 7590 11/13/2008

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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	PAPER NUMBER
2628	
MAIL DATE	DELIVERY MODE
11/13/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/817,516	SHUM ET AL.	
	Examiner	Art Unit	
	Antonio A. Caschera	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,30-45 and 55-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,30-43,45,55,56,58 and 59* is/are rejected.

7)☒ Claim(s) *44 and 57* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract comprises the phrase, “Techniques are disclosed…” (see line 1) which can be implied and therefore should be omitted.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: #1500, 2502, 2504, 2506, 3000. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not

accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 9 and 44 are objected to because of the following informalities:

a. Claims 9 and 44 comprise the language, "…instructions…that, when executed,…" (see lines 1-2 of the claims) which, the phrase, "when executed" should be omitted as it implies a situation in that such instructions are not executed in which case, the invention recited by claim 1 via claim 9 and claim 44, would not be performed.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-8, 30-43, 45, 58 and 59 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim(s) 1-8 and 58 is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of

'Processes' under 35 U.S.C. 101"). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

In reference to claim 30, the language of the claims (claim 30 and all dependently associated claims) raise questions as whether the claims fall within any of the statutory categories of invention. Specifically, the claim language of "A user interface…" (see line 1 of claim 30) is not directed to a process within the meaning of 35 U.S.C. 101, since it is not a series of steps or acts being performed, is not directed to a machine within the meaning of 101, since it is not a part of a device or a combination of devices, is not directed to a manufacture within the meaning of 101, since it is not an article produced from raw or prepared materials nor is it a composition of matter within the meaning of 101, since it is not a combination of two or more substances or do they have any mass to be matter. Further, the specification provides evidence enabling one of ordinary skill in the art to reasonably interpret the "user interface element" recited in the claims as solely software (see paragraphs 132-133 of Applicant's specification). Therefore, such claimed elements are software per se, which fails to fall within a statutory category of invention and necessitates the rejection of claims 30-34.

In reference to claim 35, the language of the claims (claim 35 and all dependently associated claims) raise questions as to whether the claims are directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. Specifically, newly implemented practices and procedures directed towards the analysis of claim language as per 35 U.S.C. 101 question the "module" elements of

the claims as per the claimed "system" found in the preamble of at least claim 35. The specification provides evidence enabling one of ordinary skill in the art to reasonably interpret the "module" elements of the claims as software routines/modules/etc. (see paragraphs 132-133 of Applicant's specification). Therefore, such claimed elements are software per se, which fails to fall within a statutory category of invention and necessitates the rejection of claims 35-43.

In reference to claims 45 and 59, the language of the claims raise questions as to whether the claims are directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. Specifically, newly implemented practices and procedures directed towards the analysis of claim language as per 35 U.S.C. 101 question the antecedent basis for the claimed terminology of a "computer-readable media" as recited in claims 45 and 59. The specification does clearly suggest to one of ordinary skill in the art that such a "computer-readable media" could be one of signals, or other forms of propagation and transmission media (page paragraphs 133 and 135 of Applicant's specification) which fail to be an appropriate manufacture under 35 U.S.C. 101 in the context of computer-related inventions and therefore requires the rejection of claims 45 and 59.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7, 9, 30-33, 35-40, 42, 43, 55, 56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Baker et al. "A Layered Approach to Stereo Reconstruction" In IEEE Computer Society Conference on Computer Vision and Pattern Recognition CVPR 1998, pgs 434- 441) in view of Lengyel et al. (U.S. Patent 6,064,393).

In reference to claim 1, Baker et al. discloses a method (see abstract and right column, page 434, 3rd paragraph wherein Baker et al. discloses a method of reconstructing a scene as a collection of approximately planar layers.) comprising:

splitting a scene into one or more coherent layers (see abstract lines 1-4 wherein Baker et al. discloses splitting a scene into multiple layers. The Office interprets the layers of Baker et al. equivalent to "coherent layers" since they are "3D" layers, comprising a depth component which therefore inherently places them in a collection of layers according to, at least depth. Further it can be see from Figure 1, that layer L1 is made up of multiple mask images as well as layer L2 being made up multiple mask images thus creating "coherent layers."), wherein:

each coherent layer of the scene has a corresponding plane equation to represent a local geometry of that coherent layer (see abstract lines 1-4 and section 2.2, page 436, 1st paragraph wherein Baker et al. explicitly discloses each layer of the scene represented by a 3D plane equation.); and

the one or more coherent layers in combination represent a single plane of the scene (see L1, L2 and associated mask images, Bk1, Mk1, Bk2, Mk2 of Figure 1 wherein Baker et al. discloses that layer L1 is made up of multiple mask images as well as layer

L2 being made up multiple mask images. Further, it can be interpreted that layers L1 and L2 together make up a single plane of the scene, as depicted in Figure 1);

propagating boundaries of the coherent layers across a plurality of frames corresponding to the scene; and

refining the splitting to present a virtual view of the scene (see sections 3.1-3.2, page 438 and Figure 5 wherein Baker et al. discloses refining layer sprite estimates and test how well the layers re-synthesize the initial input data in producing a new view of the scene.).

Although Baker et al. does disclose a layer refinement by re-synthesis processor (see section 3, page 438), Baker et al. does not explicitly disclose propagating boundaries of layers across a plurality of frames. Lengyel et al. discloses a method and system for a layered graphics rendering pipeline wherein a scene is split into separate layers (see column 1, lines 17-21 and column 5, lines 39-43). Lengyel et al. discloses managing geometry and characteristic points of each layer by tracking the motion of geometry using polyhedron boundaries (see column 13, lines 29-36 and columns 13-14, lines 65-6). Lengyel et al. further discloses extending clipping regions of the layer in a particular frame (see column 14, lines 20-31) which the Office interprets equivalent to Applicant's "propagating boundaries…" limitation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the extension of clipping region of layers of Lengyel et al. with the scene/layer reconstruction techniques of Baker et al. in order to ultimately reduce additional rendering cycles by increasing the changes that a sprite or geometry of a layer can be re-used as it moves onto the screen (see column 14, lines 28-31 of Lengyel et al.).

In reference to claims 2, 32 and 36, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claims 1, 30 and 35 respectively in addition, Baker et al.'s example output of Figure 5 shows substantially no aliasing. Further, Baker et al. discloses that a prior approach to scene defining, utilizing volumetrics, leads to aliasing (see section I, page 434, 2nd paragraph).

In reference to claim 3, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claim 1 in addition, Baker et al. discloses each layer comprising mask images, some of which Boolean Masks, form what can be interpreted as a background layer of the coherent layer L1 (see Figure 1).

In reference to claims 4 and 37, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claims 1 and 35 respectively. Since Lengyel et al. discloses tracking geometric motion changes in layers from frames and further discloses such geometry "moving onto the screen" (see column 14, lines 29-31), the Office interprets that the combination of Baker et al. and Lengyel et al. disclose that a plurality of frames correspond to different images of a scene.

In reference to claims 5 and 38, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claims 1 and 35 respectively. Baker et al. refining layer sprite estimates and test how well the layers re-synthesize the initial input data in producing a new view of the scene (see sections 3.1-3.2, page 438 and Figure 5). Lengyel et al. discloses implementation of the invention in authoring tools operated by a user in an authoring/playback environment (see column 12, lines 40-67 and column 13, lines 11-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the user authoring tools

control of layer editing of Lengyel et al. with the scene/layer reconstruction techniques of Baker et al. in order maximize control and customization of desired output of scene data by allowing for user "tweaking" of processed scene data.

In reference to claims 6 and 39, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claims 1 and 35 respectively in addition, Baker et al. explicitly discloses each layer of the scene having a corresponding plane equation representing geometry of the layer (see abstract lines 1-4 and section 2.2, page 436, 1st paragraph).

In reference to claims 7, 33, 40 and 56, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claims 1, 30, 35 and 55 respectively in addition, Lengyel et al. discloses rendering layers with previous background layers improving the coherence in the background layers by separating fast and slow moving objects (see column 9, lines 10-19).

In reference to claims 9 and 42, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claims 1 and 35 respectively in addition, Lengyel et al. discloses the system implementing the invention to comprise of a variety of computer readable media for storing program instructions to perform the above invention (see column 31, lines 47-53 and Figure 19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the scene/layer reconstruction techniques of Baker et al. on using a computer and computer readable medium as described by Lengyel et al. since it is well known in the art of computer graphics to process scene/frame/graphics data utilizing a computer, executing some sort of instructions/program/software stored on a storage device.

In reference to claims 30, 35 and 55, claims 30, 33 and 55 are equivalent in scope to claim 1 and is therefore rejected under like rationale. In addition to the rationale as applied to

claim 1, claims 30 and 35 recite, "a user interface" and "system", respectively, with various "modules." Lengyel et al. discloses implementation of the invention in authoring tools operated by a user in an authoring/playback environment (see column 12, lines 40-67 and column 13, lines 11-17). Lengyel et al. also discloses the system implementing the invention to comprise of a variety of computer readable media for storing program instructions to perform the above invention (see column 31, lines 47-53 and Figure 19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the user authoring tools, control of layer editing of Lengyel et al. with the scene/layer reconstruction techniques of Baker et al. in order maximize control and customization of desired output of scene data by allowing for user "tweaking" of processed scene data. Note, it can be interpreted that the "authoring tools" of Lengyel et al. inherently comprise of a user interface allowing for various editing of the layer data as detailed by Lengyel et al. in columns 12-13, 40-17. Further, in reference to claim 55, the Office interprets the various "means for" limitations taught by, at least, the rendering system of Lengyel et al. which comprises a host PC and DSP among other elements (see Figure 19 and columns 29-31, lines 11-53).

In reference to claim 31, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claim 30. Lengyel et al. discloses managing geometry and characteristic points of each layer by tracking the motion of geometry using polyhedron boundaries (see column 13, lines 29-36 and columns 13-14, lines 65-6) and then further clipping data according to such boundaries (see column 14, lines 20-31).

In reference to claim 43, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claim 35 in addition, Lengyel et al. discloses multiple processing units

to execute stored, upon a variety of computer readable media, instructions to perform the invention as described above (see column 31, lines 47-53 and Figure 19).

In reference to claim 58, Baker et al. and Lengyel et al. disclose all of the claim limitations as applied to claim 1 in addition, Baker et al. discloses a scene represented by a set of colored images (see abstract, lines 1-6).

Response to Arguments

6. Applicant's arguments, see paragraph 10, page 16 of Applicant's Remarks, filed 10/27/08, with respect to the 35 USC 101 rejection of claims 9 and 44, 46 and 47 have been fully considered and are persuasive. The 35 USC 101 rejection of claims 9, 44, 46 and 47 has been withdrawn. Note, claims 45 and 59 still however suffer from the nonstatutory "computer readable media" type language and are still rejected under 35 USC 101 (see above).

7. Applicant's arguments, see pages 17-24 of Applicant's Remarks, filed 10/27/08, with respect to the rejection(s) of claim(s) 1-9, 30-47 and 55-57 under 35 USC 102, in view of Williams, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Baker et al. and Lengyel et al..

8. In regards to the analyzation of claims 9 and 44 in view of 35 USC 101, the Office deems such claims as reciting statutory subject matter as the current practices and procedures of the Office deem the "computer-readable storage media" language of such claims to differentiate from the broader "computer readable media" which is seen to include the nonstatutory "communication media" type (see paragraph 133 of Applicant's specification).

9. In regards to the analyzation of claims 55-57 in view of 35 USC 101, the Office deems such claims as reciting statutory subject matter as the current practices and procedures of the Office deems the apparatus of claims 55-57 and the "means for" elements as hardware elements as interpreted by "means for" type claim language and MPEP 2181 wherein "means-plus-function language shall be construed to cover the corresponding structure…described in the specification and equivalents thereof."

Allowable Subject Matter

10. Claim 57 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Note, claim 44 would be deemed allowable if it were rewritten to overcome the above objection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung, can be reached at (571) 272-7794.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

571-273-8300 (Central Fax)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571) 272-2600.

/Antonio A Caschera/

Examiner, Art Unit 2628

Temporary Full Signatory Authority

11/13/08